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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,480	09/29/2005	Terrence Kolenc	22188/07058	4310
24024 7590 10/30/2007 CALFEE HALTER & GRISWOLD, LLP 800 SUPERIOR AVENUE SUITE 1400 CLEVELAND, OH 44114			EXAMINER FRISTOE JR, JOHN K	
			ART UNIT 3753	PAPER NUMBER
			MAIL DATE 10/30/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

CT

Office Action Summary	Application No.	Applicant(s)	
	10/551,480	KOLENC ET AL.	
	Examiner	Art Unit	
	John K. Fristoe Jr.	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22, 26-34 and 60-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22, 26-34 and 60-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-22, 26-34, and 60-64 have been considered but are moot in view of the new ground(s) of rejection. Since the new grounds of rejection were not necessitated by amendment the instant Office action remains non-final.

Claim Objections

2. Claim 4 is objected to because of the following informalities: "the second instance of "valve" should be replaced with "valve seat". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is no antecedent basis for the "metal valve seat".

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 6, 12-15, 27-29, 34, 60, 61, and 64, as well as 11 as far as it is definite, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.). Nakata et al. disclose a diaphragm valve

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and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), , wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2).

Regarding the crimping and digging recited in the claims, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 6,357,339 (Ejiri). Nakata et al. disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or

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more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the interior surface of the valve seat being flush with the fluid passageway. Ejiri teaches a diaphragm comprising a fluid passageway (12), a valve body (11), a diaphragm (15), a valve seat (13) flush with the fluid passageway (12), wherein the valve seat (12) forms a continuous surface, wherein the seat (13) on the same axis as the fluid passageway (12), a sealing surface (upper portion of element 13), one or more protrusions (surrounds element 13 in figure 1), and wherein at least a portion of the valve seat (13) is hardened (the valve seat is hard with respect to softer materials). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the diaphragm valve of Nakata et al. by making the interior surface of the valve seat flush with the fluid passageway as taught by Ejiri in order to decrease the risk of fluid disturbances as it passes by the valve seat.

9. Claims 7-9, 17, 19-22, 30, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,211,373 (Baker). Nakata et al. disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and

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11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat being case hardened.

Baker teaches a valve assembly comprising a valve seat (50) that is case hardened having a hardness of greater than 55 Rockwell C (col. 4, lines 46-51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the diaphragm valve of Nakata et al. by case hardening the valve seat as taught by Baker in order to improve the strength and lifespan of the valve seat.

10. Claim 10 and 63 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 6,341,758 (Shih et al.). Nakata et al. disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the

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valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat is harder than the diaphragm. Shih et al. teach a diaphragm valve comprising a diaphragm (13) and a harder valve seat (211). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the diaphragm valve of Nakata et al. by making the seat harder than the diaphragm as taught by Shih et al. in order to improve sealing in the valve closed position.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 3,592,440 (McFarland). Nakata et al. disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat being covered by a thin layer of polymeric material.

McFarland discloses a valve seat comprising a generally annular seat body (28, 30) made from stainless steel (col. 4, line 69), a thin layer of polymeric material (col. 4, lines 60-63), and wherein the polymeric material is applied to the sealing surface (col. 4, lines 60-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

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modify the diaphragm valve of Nakata et al. by coating the seat with a thin layer of polymeric material as taught by McFarland in order to seal the valve against the seat more effectively.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,211,373 (Baker) as applied to claim 17 above, and further in view of U.S. Pat. No. 6,357,339 (Ejiri). Nakata et al. modified above, disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the interior surface of the valve seat being flush with the fluid passageway. Ejiri teaches a diaphragm comprising a fluid passageway (12), a valve body (11), a diaphragm (15), a valve seat (13) flush with the fluid passageway (12), wherein the valve seat (12) forms a continuous surface, wherein the seat (13) on the same axis as the fluid passageway (12), a sealing surface (upper portion of element 13), one or more protrusions (surrounds element 13 in figure 1), and wherein at least a portion of the valve seat (13) is hardened (the valve seat is hard with respect to softer materials). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the diaphragm valve of Nakata et al. by making

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the interior surface of the valve seat flush with the fluid passageway as taught by Ejiri in order to decrease the risk of fluid disturbances as it passes by the valve seat.

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. P. G. Pub. 2003/0025099 (as evidenced by U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,211,373 (Baker) as applied to claim 17 above, and further in view of U.S. Pat. No. 6,341,758 (Shih et al.). Nakata et al. modified above, disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat is harder than the diaphragm. Shih et al. teach a diaphragm valve comprising a diaphragm (13) and a harder valve seat (211). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the diaphragm valve of Nakata et al. by making the seat harder than the diaphragm as taught by Shih et al. in order to improve sealing in the valve closed position.

14. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,131,627 (Kolenc). Nakata et al. disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve

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body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks a metal diaphragm. Kolenc discloses a diaphragm valve comprising a fluid passageway (10, 12), a valve body (B), a metal diaphragm (32), and a valve seat (102). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the diaphragm valve of Nakata et al. by making the diaphragm metal as taught by Kolenc in order to make the diaphragm more resilient as since the replacement of these parts would yield a predictable outcome.

15. Claim 32 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,131,627 (Kolenc) as applied to claim 31 above, and further in view of U.S. Pat. No. 6,341,758 (Shih et al.). Nakata et al. modified above, disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of

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element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat is harder than the diaphragm. Shih et al. teach a diaphragm valve comprising a diaphragm (13) and a harder valve seat (211). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the diaphragm valve of Nakata et al. by making the seat harder than the diaphragm as taught by Shih et al. in order to improve sealing in the valve closed position.

16. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,786,471, Nakata et al.) in view of U.S. Pat. No. 5,131,627 (Kolenc) as applied to claim 31 above, and further in view of U.S. Pat. No. 5,211,373 (Baker). Nakata et al. modified above, disclose a diaphragm valve and method of making a valve seat comprising a fluid passageway (8A), a valve body (2), a diaphragm (5), a valve seat (3), one or more protrusions (3D, 3E), portion of the valve (7 and 11), wherein the valve seat (3) is an insert, a recess (between elements 7 and 11 in figure 1), wherein the valve seat (3) is inserted with a valve seat recess (between elements 7 and 11 in figure 1) formed by an outer body wall 911) and open (upper portion is open to element 8A) to said fluid passageway (8A), a raised seat surface (upper portion of element 3), a metal valve seat (col. 3, lines 63-64), wherein the one or more protrusions (3D, 3E), are angled ("angled" includes 90 degrees), wherein the valve seat (3) is hardened (metal element 3 would have a hardness), and wherein the valve seat is removable (figure 2) but lacks the valve seat being case hardened. Baker teaches a valve assembly comprising a valve seat (50) that is case hardened having a hardness of greater than 55 Rockwell C (col. 4, lines 46-51).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the diaphragm valve of Nakata et al. by case hardening the valve seat as taught by Baker in order to improve the strength and lifespan of the valve seat.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John K. Fristoe Jr. whose telephone number is (571) 272-4926.

The examiner can normally be reached on Monday-Friday, 7: 00 a.m-4: 30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Huson can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John K. Fristoe Jr./
John K. Fristoe Jr.
Examiner
Art Unit 3753

JKF